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REVIEWS

THE NEW METEOROLOGY[1]

A war story relates that a commanding officer ordered his Adjutant to ascertain the probable direction of the wind at a specified hour on the following day. "Can't tell you offhand, sir," replied the Adjutant. "I'll send out a detachment to catch a couple of Boches—quickest way, sir." It might be difficult to provide a voucher for the foregoing, but it illustrates an important and embarrassing discovery made by American officers overseas, namely, that the Germans were abundantly provided with all the necessary meteorological information of which they themselves were almost hopelessly destitute. "Back in the high school," said a youthful shavetail, "I learned that water froze at 32° ; but here in this bloomin' country it doesn't freeze till the weather gets down to zero!"

One of the first and most necessary steps, therefore, was the training of a corps of officers and men in the elements of aerology, or meteorology in its broader sense. For this purpose the United States Weather Bureau detailed members of its staff as instructors and field officers. Among them was Professor Alexander McAdie, at that time in charge of the Blue Hill Observatory. His appointment as senior aerographic officer overseas indicates his qualifications as a meteorologist.

McAdie's Principles of Aërography, published in 1917 and followed recently by a new edition, is one of the first, if not the first, publication which may be regarded as an exposition of the new meteorology. Just as the school geography of calico maps and lists of localities to be "bounded" has expanded into the science of environment as the dominating factor in human activities, so the new meteorology has expanded and developed into a science that is the full partner of the new geography. It is the science of the air and its conditions as they govern life; for, after all, human history may be regarded very largely as a quantitative expression of temperature, wind, and rainfall.

Weather conditions of the most densely peopled part of the United States may be the result of air pressure in polar regions, to be learned at the Greenland weather station. And the ice which blocks the harbor of Halifax may be born of wind and weather in the Caribbean Sea. Rainfall in India may determine the price of wheat in Chicago; and the height of water in the Nile may mean either prosperity or adversity to the cotton planter in Texas. Not air measurements at ground level, but air measurements a score of miles above ground level, determine the winter's consumption of coal; and, incidentally, whether humanity is to have happiness or misery for its side partner during a coming winter. "Air to be warmed must first be cooled; and air to be cooled must first be warmed," Dr. Humphreys tells us; and this is Dame Nature's method of regulating things. McAdie's Aërography—he might as logically have styled the book Aërology—presents the new meteorology in this light.

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[1] McAdie, Alexander, "The Principles of Aërography," Rand McNally and Co., Chicago–New York, 1921.

The chapter, Stratosphere and Troposphere, is presented not only with diagrams and tabulated matter necessary for reference, but also with a clear and interesting descriptive text—apparently the first treatise in the United States to contain an exposition of this feature of meteorology. The subjects of atmospheric water vapor, winds, clouds, and condensation are splendidly illustrated. The cloud photographs, a few by Ellerman and Ziel, but mainly those made by the author, are fine pieces of work—as artistic as they are interesting. The cirrostratus storm-breeder, with its wispy edges, would be a most useful print as a part of the equipment of the cooperative observer's station.

The chapter on atmospheric electricity contains Simpson's theory of thunderstorms which has been pretty well substantiated by artificial reproduction of atmospheric discharges. It is interesting to note in this connection that a rod of electrified vulcanite brought near a fine spray discharged from a nozzle causes the droplets to coalesce into tremendously large drops as they fall. The author brings out the important fact that thunderstorms and tornadoes are due to the same abnormal movements of the air; they are in the same class. The chapter is illustrated by a dozen photographs of lightning flashes, spectra, and graphs.

Professor McAdie arouses the suspicion that he is a dreadful crank on the subject of the metric system. So far as C.G.S. units are concerned his attitude is justifiable, for, in time, these are the terms in which the physics of the air must be mathematically expressed. Temperature is expressed in the degrees of the absolute scale. But inasmuch as air temperatures are expressed in Fahrenheit degrees among English-speaking people, the author would have simplified matters by placing them parenthetically in the text.

Professor McAdie's Aërography is a treatise rather than a textbook. Nevertheless the student in meteorology who fails to use it along with his textbook misses a lot of instructive literature of the subject. It is written in good, clear English and is interesting from cover to cover. The author evidently is not in sympathy with the opinion that a treatise to be scholarly must be in a style so stupid as to be lethal.

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